California Building Code
State Fire Marshal Amendment Project
Working Group No. 2 – B Occupancies
Friday, August 26, 2005

- General Meeting guidelines/observations
  - Meetings need to be held in person. Teleconference is not likely to be useful due to the need to refer to tables & text in both the IBC and CBC documents.
  - Working Group immediately recognized the need for basic tools to facilitate collaborative work & discussion:
    - White board
    - Laser pointer
    - Laptop computer
    - Projector
    - Project Matrix
    - Hard and electronic codes (IBC and CBC's)
    - Copy of 9-point criteria
  - Eating lunch in the meeting room enabled the group to continue working, rather than taking a lengthy break to depart, go to lunch off-site, return & start over again. Lunch should be something simple, that will not interfere with work.
  - Case of bottled water – during meeting & through lunch

Paul Armstrong was unanimously nominated and he graciously accepted to be the Chair of this Group.

Working Group started by looking at the list of "Uses" included in both the CBC and IBC to ensure that there were no serious gaps created by the IBC. Only two issues were noted, which turned out to be insignificant (does not need to be addressed by a SFM amendment)

- 304.1 – Listed uses
  - Fire and Police Stations not on list in IBC
  - No action necessary: Explanation – ICC has adopted a "mixed occupancy concept" wherein a Fire Department does not need to be listed as a separate use; under the IBC, it would be considered a mixed use with a garage, a dormitory, an office, etc.– no substantial difference in life safety – no action by group
  - Airport Traffic Control Towers is listed in IBC. There is a question as to whether local jurisdiction or FAA is responsible for the construction of the Airport Traffic Control Towers. Does FAA verify compliance with the Structural (Seismic) or Disabled Access Requirements?
  - No action necessary: Explanation – Air Control Towers are governed by Federal Regulations, not state or municipal regulations. The tower is administered separately from the terminal. Terminals are regulated by local

jurisdictions, and are handled under the "mixed occupancy concept" as restaurants, waiting rooms, bars/lounges, offices, etc. – no action by group.

Working Group examined occupancy separation requirements that would affect B-Occupancies to ensure a continued level of current protection.

- Table 302.3.2 – New footnotes in ICC table exempt storage areas from occupancy separation from B & M occupancies in certain cases – no substantial change or decrease in current level of protection – no action by group.

Observation: Working Group noted that IBC does not have a section at the front of the code similar to UBC's "Effective Use of UBC"

- Would have been nice to have, because it would have laid out a logical sequence of steps to use in comparing examples to determine safety equivalency. No action taken by group (just an observation)
- Instead, simply follow order prescribed in DRAFT Matrix prepared by Laura Blaul

Working Group discussed portions of CBC that appear to be entirely developed by the State and contemplated the following question: "Will State-developed chapters carry over in total to the IBC, just as they were developed in the CBC?"

- Working Group called Stan Nishimura for clarification. Stan confirmed that the "base code" that each state agency will be dealing with is the IBC. This means that ANY amendments (even if they previously existed in the CBC) must be justified under the 9-point criteria, as compared to the base IBC. – Comparison under 9-point cannot simply reference the past CBC, because that IS NOT the base code that the amendment will modify. Note: This will make justification under 9-point difficult in many cases, especially economic impact.
- Stan reminded the group that an adverse economic impact, by itself, may not be sufficient to prevent adoption of a particular amendment. The general benefit derived by the amendment must significantly out-weigh the adverse economic impact, thereby justifying such amendment's introduction.
- All Working Groups need to review CA developed language, see if it is already covered in the base IBC. If it is, then there is no need for action by the group. If the CA developed language is not covered in the base IBC, then the group needs to determine if the absence of such CA language results in a substantive reduction in overall public safety. If not, then no action is required by the group, and streamline the code. If overall public safety is compromised by the lack of CA language, then the group must consider how to amend the base IBC to achieve equivalency.
    - Any non-statutory amendments will need to meet 9-point criteria.
    - SFM's office will need to ensure that all statutory regulations are properly carried over into the IBC.
        - This is especially true if a statutory regulation was added to the CBC as typical CA developed language, which does not exist in the IBC, and which is deemed insignificant by the working group.

In such a case, the working group would most likely choose not to carry the amendment over into the IBC, since no significant public benefit can be identified.

- SFM will either need to identify all statutory amendments, and provide such information to all working groups during the kick-off meeting, or SFM will need to handle all statutory regulations separate from this project.

Working Group got distracted a few times on non-SFM amendments, but quickly refocused each time.

- All Working Groups are reminded to stay focused and be looking for SFM amendments only.

Working Group methodically went through Chapter 3 of CBC to make sure all code provisions specifically related to Group B Occupancies in the current code were examined.

- All Working Groups are reminded of the new format of the IBC. There is no chapter that consolidates the special provisions that apply to each occupancy type. (This has traditionally been handled in the CBC by chapter 3, which includes special provisions based on occupancy).
- Under the IBC, Working groups must consider what the nature is of a particular issue, and then check the corresponding chapter to see if such issue is adequately addressed to provide the same level of community protection.
- CBC 304.8 – Special hazards, last paragraph, lead acid batteries. Shall conform to the requirements of the fire code. -- IBC addresses in Chapter 4, hazardous conditions. IBC Sec. 414.1.1 Adequate: no substantial difference in life safety – no action by group

Working Group Spent significant time examining Areas/Heights/Types of Construction and Location on Property.

- IBC is much more liberal than CBC
- In general, B-Occupancies under IBC (ie., compared to current CBC)
  - All 4-hour exterior wall ratings drop to 3-hour
  - Remainder of table substantially the same (exterior wall construction)
  - Roof Const. – drops 30 minutes in Type 1A
- IBC Table 602 compared to UBC Table 5-A
  - Opening Protection in IBC Chapter 7

Test Scenario -- Group B Type I const. under IBC (ie., compared to CBC)

- Table 601 – Exterior wall drops an hour to 3 hr.
- Table 602 – Proximity to prop line req. 1 hour rating.
- IBC location on property – Look at Tables 602 and 601 to determine most restrictive rating to compare to UBC Table 5-A
- Analysis – The exterior wall rating will generally be driven by the type of construction for the more fire resistant types. The rating will be driven by proximity to property line for the less restrictive types. This pattern is across the board for both codes.

Test Scenario – Type II FR, Type III – 1 hr. and Type III N

- CBC – within 5 ft. requires 4 hr.
- IBC – within 5 ft. - 601 and 602 requires 2 hr.
- Analysis – IBC deficient

Working Group examined exterior wall opening protection standards (ie., in close proximity to property lines)

- IBC uses a slightly different approach to protecting exterior wall openings. In addition to requiring fire-protection of openings that are located close to PL's, the IBC also limits the percentage of wall area that may have exterior openings. A table is provided (Table-704.8) that provides various combinations of % and protection based on distance from PL.
  - While the IBC does things differently (Table 704.8), the protection seems to be adequate. In fact, the IBC seems more conservative for openings in walls more than 20' away from a PL.
  - Gradual increase in opening protection and limitation of % seems to be a more realistic/appropriate method for real-life situations.
    - Example 1: B Occupancy Type I FR
      - UBC: Not Permitted < 5'
      - UBC: Protected < 20'
      - IBC: Not Permitted < 3'
      - IBC: Unprotected 0% Protected 15% between 3-5 ft.
      - IBC: Various combinations of protected/unprotected % based on distances between 5' and 20'
      - IBC: Beyond 20' unlimited Protected openings, w/ various % of unprotected openings permitted between 20' and 30'
      - IBC: Beyond 30' unlimited Unprotected openings

    - Example 2: B Occupancy Type V-N
      - IBC Table 704.8 – Greater than 20' more conservative than UBC due to percentage of protected openings.
    - Reference the formula in IBC Sec. 704.8. Formula may be used, but must be more restrictive than Table 704.8
    - Table 704.8 appears to be generally more restrictive (except for walls located from 3' to 5' from a PL
      - Table 704.8 will be complex to enforce and plan check
      - Handling existing buildings will be a substantial challenge.
        - Mixing existing buildings built under UBC will be a significant challenge
        - After IBC is adopted, existing multi-tenant buildings in which new tenants want to cut in new windows will be a challenge, because previous TI's may "use-up" the allowable % of unprotected openings. Protected? Non-protected?

- Overall level of protection is substantially equal to UBC – no action by group

Allowable Floor Area
1 SFM amendment in CBC Sec. 504.6.1 requires 4-hr. area separation wall without openings to create separate buildings for the purpose of automatic fire sprinkler system requirements as set forth in chapter 9. Buildings required to have sprinklers per H&SC Sec. 13113 are prohibited from using area separation walls in lieu of fire protection. Important Note: Review the provisions of H&SC Section 13113 to verify that language in the H&SC is in fact regarding prohibition of area separation walls in lieu of fire protection. If not then this State Fire Marshal amendment should not be carried over to the IBC, because it is not a statutory provision. Review all H&SC references made in the CBC.

- Not applicable to Group B occupancies, but will be applicable to other groups. No action by Working Group 2, but should be examined by other working groups in case there is an affect. If so, other working groups may need to carry this amendment over.

Height and Number of Stories

- This is the biggest area of concern noted by Working Group 2
- Background: During the development/consolidation of the 3-model codes into the IBC codes were compared and used weighted average – fire history statistics did not call for restrictive height and area. Did not want to discourage redevelopment by sending existing, conforming buildings into an existing, nonconforming classification. Building owners would generally not construct new, smaller buildings on their lots.
- Typical comparison of an example building:

CBC	IBC
Type III N 1 story 200’ X 200’ 20’ yards on all 4 sides 12,000 + 24,000 (sprink) = 36,000	Type III B 1 story 200’ X 200’ 20’ yards on all 4 sides 4.75 X 19,000 = 90,250 19,000 + ([19,000 x 75]/100) + ([19,000 + 300]/100) = 90,250

- IBC Section 506.1 results in larger area increases because the modifiers are additive.
- IBC Section 506.4 exaggerates this effect because the entire area equation of 506.1 is multiplied by two (or three) for respective multi-story buildings.
  - Amendments will most likely need to be entertained on this code language.
  - Under the IBC, these buildings are getting bigger.

- Summary: Whereas the CBC allows increases for either area or number of stories, the IBC allows increases for both area and number of stories.

Working Group concluded by examining "other" Occupancy Requirements listed in CBC

- IBC Sec. 411.1, UBC Sec. 304.2.2.2 Amusement buildings, less than 50 occupants. No substantial issues identified - no action taken by group
- CBC Sec. 304.2.2.1 Laboratories and vocational shops. Addressed in IBC Sec. 414.2, Table 414.2.2. No substantial issues identified - no action taken by group
- Ventilation requirements for Class I, II, and IIIA flammable liquids presents a potential problem in the IBC for "exempt quantities".
    - CBC Sec. 304.5.1 Ventilation of flammable vapors. Requires a minimum of 6 air changes per hour, even for exempt quantities (ie., non H-occupancies)
    - IBC Sec. 1203.5 Other ventilation and exhaust systems addresses flammable and combustible liquids via either the International Mechanical or the International Fire Code. It appears that the International Fire Code does not address general ventilation. The Fire Code looks at ventilation for hazardous materials. Therefore, if the quantities are sufficient to establish an H occupancy, then ventilation is adequately addressed. But if the quantities are less than the exemption limit, no ventilation requirements exist in the IBC. This may warrant entertaining an amendment to ensure occupancies with class I, II, or IIIA liquids are ventilated.

General non-exiting (shafts) Elevator shafts

- No special SFM provisions
- IBC Section 707 for shafts appears to cover major requirements of shafts (dub-waiters, etc.). Exit shafts are covered in Chapter 10.
- IBC Section 707.14.1 implies low-rises do not need elevator lobbies via exception 3.
- IBC Section 707.14.1 has 4 ways to justify the lack of elevator lobbies.
    - This is not an issue that is specific to any particular occupancy, and it may warrant attention by a separate working group that will focus on exiting issues.

Sprinkler and Standpipe requirements are consistent between the CBC and IBC. No substantial issues identified - no action taken by group

Open Flame Separation Distance

- CBC Section 304.8 requires ignition source to be at least 18" above the floor of Class I flammable liquids.
- The IBC references the IFC, which only addresses H occupancies. Therefore, under the IBC, there is no requirement to elevate an ignition source any specific

height above the floor when Class I liquids may be present. This may warrant entertaining an amendment.

Interior Finish

Provision of sprinklers relaxes the requirements of interior finishes throughout the IBC while the CBC does not. The IBC is more stringent than the CBC because it views the vertical and exit passageways as the same.

Exiting Issues

It was decided that exiting would need to be developed by a separate group as exiting impacts all other occupancies. Issues are generally not specific to a particular occupancy.